Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-16. (cancelled)

17. (Currently amended) A polyphase circulating switch comprising:

a plurality of switch modules ~~each having a module controller~~;

a first plurality of clockwise rotators each of said clockwise rotators having a respective reference phase ~~reference~~; and

a second plurality of counterclockwise rotators each of said counterclockwise rotators having a respective reference phase ~~reference~~;

wherein each of said switch modules is communicatively connected through a dual channel to ~~at least one of said~~ each clockwise ~~rotators~~ rotator and to ~~at least one of said~~ each counterclockwise ~~rotators~~ rotator and wherein at least two of said clockwise rotators have different reference phases and at least two of said counterclockwise rotators have different reference phases.

18. (Original) The polyphase circulating switch of claim 17 wherein each of said clockwise rotators is operable to connect each of said switch modules to each other of said switch modules during a rotation cycle, where said rotation cycle includes a plurality of rotation phases, and each of said counterclockwise rotators is operable to connect each of said switch modules to each other of said switch modules during said rotation cycle.

19. (Original) The polyphase circulating switch of claim 17 further comprising:

a plurality of module controllers, each module controller of said plurality of module controllers associated with a switch module of said plurality of switch modules; and

a master controller operable to:

determine a schedule for data exchange among the switch modules; and

transmit said schedule to said each module controller.

20. (Original) The polyphase circulating switch of claim 19 wherein the master controller is further operable to receive a connection request and select one of said clockwise rotators and one of said counterclockwise rotators for routing the requested connection.

21. (Original) The polyphase circulating switch of claim 19 wherein the master controller is further operable to determine a switching delay from each of said switch modules to each other of said switch modules through each of said clockwise rotators and through each of said counterclockwise rotators.

22. (Currently amended) The polyphase circulating switch of claim 17 wherein at least one of said clockwise rotators is programmable to set its reference phase ~~reference~~.

23. (Currently amended) The polyphase circulating switch of claim 22 wherein the ~~phase references~~ reference phases of said plurality of clockwise rotators are evenly spread over said rotation cycle.

24. (Currently amended) The polyphase circulating switch of claim 17 wherein at least one of said counterclockwise rotators is programmable to set its reference phase ~~reference~~.

25. (Currently amended) The polyphase circulating switch of claim 24 wherein the ~~phase references~~ reference phases of said plurality of counterclockwise rotators are evenly spread over said rotation cycle.

26. (Withdrawn) A method of scheduling a connection in a polyphase circulating switch that includes a plurality of switch modules interconnected by at least two mutually phase-shifted rotators, a request for the connection specifying a source switch module, a destination switch module, and a required capacity, the method comprising:

determining a switching delay for at least two candidate paths, each path traversing a corresponding rotator, selecting from the at least two candidate paths a candidate path having the least switching delay; and

scheduling capacity along said candidate path having the least switching delay.

27. (Withdrawn) The method of claim 26 further comprising determining switching delays from each of said switch modules to each other of said switch modules through each of said at least two mutually phase-shifted rotators and storing said switching delays for frequent use.

28. (Withdrawn) A constellation comprising:

a plurality of switch modules;

an array of rotators including a plurality of rotators, each rotator of said plurality of rotators having a plurality of inlets and a plurality of outlets, where said plurality of inlets and said plurality of outlets are communicatively connected to said plurality of switch modules and where said each rotator is operable to cyclically connect each switch module of said plurality of switch modules to each other switch module of said plurality of switch modules by a

cyclical connecting of individual inlets among said plurality of inlets to individual outlets among said plurality of outlets;

a master controller associated with at least one rotator of said array of rotators said master controller including a master timing circuit; and

a module controller associated with each switch module of said plurality of switch modules, said module controller including a module timing circuit for time-locking to said master timing circuit.

29. (Withdrawn) The constellation of claim 28 wherein said plurality of rotators are arranged in two rotator groups, one rotator group including at least one clockwise rotator performing said cyclical connecting in a clockwise order and the other rotator group including at least one counterclockwise rotator performing said cyclical connecting in a counterclockwise order.

30. (Withdrawn) The constellation of claim 28 wherein said plurality of switch modules are geographically distributed over a wide area.

31. (Withdrawn) The constellation of claim 30 wherein said each switch module has a link to said array of rotators, said link carrying a plurality of wavelength channels, each wavelength channel in said plurality of wavelength channels connecting to a corresponding rotator in said array of rotators.

32. (Withdrawn) The constellation of claim 31 further comprising, in said module controller, a plurality of additional timing circuits such that said module controller includes a timing circuit corresponding to each rotator in said array of rotators; where said timing circuit and said plurality of additional timing circuits are adapted to time-lock said switch module to said master timing circuit along each wavelength channel of said plurality of wavelength channels.

33. (Withdrawn) The constellation of claim 32 where said array of rotators is a first array of rotators, said master controller is a first master controller and said link associated with said each switch module is a first link, said constellation further comprising:

a second array of rotators arranged in complementary rotator pairs; and

a second master controller associated with said second array of rotators;

wherein said each switch module has a second link to said second array of rotators, said link carrying a plurality of wavelength channels, each wavelength channel in said plurality of wavelength channels of said second link connecting to a corresponding rotator in said second array of rotators.

34. (Withdrawn) The constellation of claim 33 wherein said first array of rotators includes an even number of rotators exceeding two and said complementary rotator pairs are mutually phase shifted.

35. (Withdrawn) The constellation of claim 33 wherein said second array of rotators includes an even number of rotators exceeding two and the complementary rotator pairs are mutually phase shifted.

36. (Withdrawn) A network of constellations comprising:

a plurality of constellations, each constellation of said plurality including a plurality of switch modules interconnected by at least one array of rotators;

a multiple-wavelength-channel link from a rotator array of a first constellation of said plurality of constellations to a switch module of a second constellation of said plurality of constellations; and

a multiple-wavelength-channel link from said switch module of said second constellation to a rotator array in said second constellation.

37. (Withdrawn) The network of claim 36 further comprising a plurality of master controllers, each master controller of said plurality of master controllers associated with a corresponding one of said arrays of rotators and a plurality of module controllers, each module controller associated with a corresponding one of said switch modules.

38. (Withdrawn) The network of claim 37 wherein said each master controller includes a master timing circuit and said each module controller includes at least one module timing circuit for time-locking to one of said master timing circuits.

39. (Withdrawn) The network of claim 38 wherein said time locking is performed along each wavelength channel in said multiple-wavelength-channel link.